

Message

From: LEE, LILY [LEE.LILY@EPA.GOV]
Sent: 11/1/2016 6:50:17 PM
To: zachary.edwards@navy.mil; matthew.slack@navy.mil
CC: Robinson, Derek J CIV NAVFAC HQ, BRAC PMO [derek.j.robinson1@navy.mil]; Janda, Danielle L CIV [danielle.janda@navy.mil]; Nguyen, Lyndsey [Nguyen.Lyndsey@epa.gov]; Chesnutt, John [Chesnutt.John@epa.gov]
Subject: EPA PRG calculator risk estimates - let's talk
Attachments: Resident_rad_prg_01NOV2016_prg26858_zero_ing_zero_inh_Realistic_1x10-4.pdf;
Resident_rad_prg_01NOV2016_prg26858_zerocover_Conservative_1x10-4.pdf

Dear Zach and Matt,

It was good to talk with you Oct. 3. As you requested, we are working on using the EPA PRG calculator to evaluate potential risks from radiation at the Shipyard. Thank you for your offer to discuss what parameters are appropriate based on your detailed knowledge of the site conditions. These facts will help make the estimates technically sound. For example, the questions below that I sent last Monday will help us see if we're understanding the situation correctly.

As a starting point, EPA headquarters Health Physicist Lyndsey Nguyen was interested in the highest concentrations that have been documented at the site historically as a potential indicator of risk of missing areas of contamination. (Of course, the sample locations where levels exceeded release criteria should have been removed long ago.) Lyndsey prepared the attached calculations based on the highest concentrations that appeared in the NIRIS spreadsheet that Danielle provided last spring that included 225,000 results since 1990. Attached are printouts of the assumptions that she used for a conservative and for a realistic scenario. The realistic scenario assumes 60 cm soil cover, no inhalation, no ingestion, and no consumption of homegrown produce. Of course we expect to refine PRG calculations based on your knowledge about the facts of the site. As you see below the highest concentrations exceed a 10^{-4} risk for 6 radionuclides in the conservative scenario and 3 radionuclides in the realistic scenario. Looking at the Ra-226 spreadsheet I sent you earlier with shallow samples (≤ 2 ft bgs), 182 locations exceed 10^{-4} risk in the realistic scenario.

We'd be interested in finding out how you are estimating risk using the Navy's approaches.

Let's talk soon about your thoughts on potential health risk. What would be a convenient date/time for you? Lyndsey and I will try to give you a call soon to follow up. In the mean time, feel free to call either of us at the numbers below.

Thanks!

- Lily

Note: This email contains predecisional, intra-agency communication, so FOIA exemption 5 could apply

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From: Nguyen, Lyndsey

Sent: Tuesday, November 01, 2016 10:28 AM

To: LEE, LILY <LEE.LILY@EPA.GOV>

Subject: PRG Runs 1×10^{-4} risk

I took a look at the highest data for each radionuclide and ran two PRGs based off of the highest data from the excel spreadsheet:

1. Conservative Approach—I ran the PRG with the highest data for each radionuclide with zero cover. I kept inhalation and ingestion rates to default values. For a risk value, I went with EPA's achievable risk when determining if remediation is needed (i.e. 1×10^{-4}).

Isotope	Concentration (pCi/g)	Total Risk	Total PRG (pCi/g)
Ac-228	3.93E+00	5.01E-09	7.84E+04
Am-241	3.31E+00	7.05E-05	4.70E+00
Bi-212+D	4.07E+00	1.08E-10	3.77E+06
Bi-214+D	3.01E+00	3.72E-10	8.10E+05
C-14	3.05E+00	2.15E-05	1.42E+01
Co-60	2.05E-01	5.94E-06	3.45E+00
Cs-137	8.04E+01	3.99E-04	2.02E+01
Cs-137+D	8.04E+01	1.59E-03	5.04E+00
Eu-152	4.96E-01	1.21E-05	4.09E+00
Eu-154	8.37E-01	1.71E-05	4.89E+00
Eu-155	1.60E-01	6.25E-08	2.56E+02
H-3	6.40E+00	2.85E-05	2.25E+01
K-40	3.86E+01	9.76E-04	3.96E+00
Pa-234	7.69E-01	1.74E-09	4.42E+04
Pa-234m	2.10E-01	1.89E-14	1.11E+09
Pb-210	2.71E+01	3.65E-03	7.43E-01
Pb-212	3.82E+00	2.47E-09	1.54E+05
Pb-214	1.65E+01	3.68E-10	4.49E+06
Pu-238	1.02E-01	2.51E-06	4.06E+00
Pu-239+D	9.02E-02	2.53E-06	3.57E+00
Ra-226	8.05E+00	7.01E-04	1.15E+00
Ra-226+D	8.05E+00	1.23E-03	6.52E-01
Sr-90+D	5.23E+00	8.19E-05	6.39E+00
Th-228	8.10E-01	2.07E-06	3.91E+01
Th-230	9.41E+01	1.82E-03	5.18E+00
Th-232+D	3.59E+00	1.02E-03	3.51E-01
Th-234+D	1.15E+01	2.71E-07	4.24E+03
Tl-208	2.57E+00	1.22E-10	2.10E+06
U-234	6.08E-01	9.55E-06	6.37E+00
U-235+D	7.50E-01	1.54E-05	4.88E+00
U-238+D	7.86E+00	1.64E-04	4.79E+00
Zn-65	9.00E-02	1.32E-07	6.80E+01

2. Realistic Approach—I ran the PRG with the highest data for each radionuclide with 60 cm of soil (that's roughly 2ft) and I zero-ed out inhalation and ingestion due to the durable cover. Again, I ran the PRG with EPA's achievable risk of 1×10^{-4} . My results are:

Isotope	Concentration (pCi/g)	Total Risk	Total PRG (pCi/g)
Ac-228	3.93E+00	3.91E-09	1.01E+05
Am-241	3.31E+00	6.12E-07	5.41E+02
Bi-212+D	4.07E+00	8.07E-11	5.04E+06
Bi-214+D	3.01E+00	2.94E-10	1.03E+06
C-14	3.05E+00	1.86E-10	1.64E+06
Co-60	2.05E-01	4.53E-06	4.53E+00
Cs-137	8.04E+01	1.91E-07	4.22E+04
Cs-137+D	8.04E+01	9.44E-04	8.51E+00
Eu-152	4.96E-01	9.29E-06	5.34E+00
Eu-154	8.37E-01	1.29E-05	6.50E+00
Eu-155	1.60E-01	3.43E-08	4.66E+02
H-3	6.40E+00	-	-
K-40	3.86E+01	1.91E-04	2.02E+01
Pa-234	7.69E-01	1.36E-09	5.65E+04
Pa-234m	2.10E-01	1.50E-14	1.40E+09
Pb-210	2.71E+01	1.83E-07	1.48E+04
Pb-212	3.82E+00	7.39E-10	5.17E+05
Pb-214	1.65E+01	2.87E-10	5.74E+06
Pu-238	1.02E-01	4.35E-11	2.35E+05
Pu-239+D	9.02E-02	1.29E-10	7.02E+04
Ra-226	8.05E+00	1.18E-06	6.81E+02
Ra-226+D	8.05E+00	4.22E-04	1.91E+00
Sr-90+D	5.23E+00	5.17E-07	1.01E+03
Th-228	8.10E-01	3.31E-09	2.45E+04
Th-230	9.41E+01	5.43E-07	1.73E+04
Th-232+D	3.59E+00	9.14E-05	3.93E+00
Th-234+D	1.15E+01	3.06E-08	3.75E+04
Tl-208	2.57E+00	9.67E-11	2.66E+06
U-234	6.08E-01	1.05E-09	5.79E+04
U-235+D	7.50E-01	2.61E-06	2.87E+01
U-238+D	7.86E+00	6.29E-06	1.25E+02
Zn-65	9.00E-02	5.93E-08	1.52E+02

Lyndsey

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From: LEE, LILY

Sent: Monday, October 24, 2016 10:56 AM

To: Robinson, Derek J CIV NAVFAC HQ, BRAC PMO <derek.j.robinson1@navy.mil>

Subject: Clarifying questions re EPA's comments on Tech Memo outline

Dear Derek and Danielle,

I'm sorry for the delay getting comments to you on the Tech Memo outline. I've had trouble getting feedback from 2 final reviewers. But I haven't gotten any major new issues since the last time we talked in San Diego. But in our review, our technical staff have some clarifying questions that could help ensure we understand what the data mean, so that our recommendations can be prioritized based on facts. I appreciate your help!

1. Thank you Danielle for sending the NIRIS spreadsheet (as a reminder below I cut & pasted the "Search Criteria")
 - a. In the field "Site Name" What does Site 00001, Site 000002, Site 000014, and Site 000038 mean?
 - b. What does a blank in that field mean?
 - c. In "Analyte Value" did you subtract out background? Did you include daughter products?
 - d. In "Location Type Desc" what does "Radiation Test Station" mean? Could these be check samples?
2. Do you still have tuna cans with original soil samples available? I thought I had heard that RASO had requested them or could request them.
3. When did the Navy switch from time & materials to fixed price contracting?
4. When was Anthony Smith working at HPNS?
5. The Cs-137 samples below are marked "No" for "removed." But I know that some work was done in the Triangle 707 area, so I'm wondering if they were later removed. Attached is a spreadsheet that just shows shallow Cs-137 samples, ranked by analyte value.

LOCATION_NAME	ANALYTE_VALUE	COLLECT_DATE	CONTR_NAME
707A1	80.4	7/14/1999	TETRA TECH EM, INC.
707A3	75.7	7/14/1999	TETRA TECH EM, INC.
707A1-A	17.8	7/14/1999	TETRA TECH EM, INC.
707A3-A	13.9	7/14/1999	TETRA TECH EM, INC.
707A1-D	2.12	7/14/1999	TETRA TECH EM, INC.
707A2	1.25	7/14/1999	TETRA TECH EM, INC.
707A1-C	1.04	7/14/1999	TETRA TECH EM, INC.
707A2-C	0.62	7/14/1999	TETRA TECH EM, INC.
707A2-G	0.45	7/14/1999	TETRA TECH EM, INC.

Search Criteria for NIRIS pull that Danielle sent in spring, 2016:

Regions:	SOUTHWEST
Installations:	HUNTERS_POINT_NS
Sample Matrices:	Soil, Swab or wipe, Storm drain sediment, Sediment
Sample Types:	Normal (Regular)
Method Groups:	Radiation
Locations without Sites:	No
Detected:	All
Reportable:	All